CTEH®
THE SCIENCE OF READY℠

South 4 Group Fire
Port Neches, Texas
Environmental Sampling & Analysis Plan

Version 1.0

Prepared on behalf of:

TPC Group

Prepared By:

CTEH, LLC

5120 Northshore Drive

North Little Rock, AR 72118

501-801-8500

November 27, 2019

	Name/Organization	Signature	Date Signed
Prepared by:	Shawn Wnek, PhD, DABT		11/28/2019
Reviewed by:	Linda Easton, Proj. Mngr.	Linda Easton	11/28/2019
Approved by:			
Approved by:			
Approved by:			
Approved by:			
Approved by:			

TABLE OF CONTENTS

1.0 INTRODUCTION AND PURPOSE

This Environmental Sampling and Analysis Work Plan (ESAP) prepared by CTEH, LLC (CTEH®), on behalf of TPC Group LLC (TPC) was developed, and will be implemented, to provide technical guidance for sampling activities in support of initial assessment activities at the TPC Port Neches Facility located at 2102 Spur 136, Port Neches, TX 77651 (the "Site"– see Figure 1-Appendix A). This ESAP describes the methods and procedures that will be followed during collection of environmental samples to assess pre-impact conditions and evaluate impacts as a result of the November 27, 2019 fire and associated response activities.

The specific objectives of the investigations and proposed sampling are discussed further in the site-specific sections presented herein; however, the main objectives in general are:

1). The collection of water and soil samples to coarsely delineate extent and nature of potential impact related to the fire and associated response activities; and,

2). The collection of background samples to determine a baseline and develop the range of potential background concentrations for comparative purposes. Note 'background samples' may additionally refer to samples collected from pre-impact locations associated with frac tank, waste and/or other equipment staging areas.

2.0 HEALTH AND SAFETY

Safety is the most important consideration when implementing this plan. All site personnel will review and adhere to TPC's Site Safety and Control Plan and company/contractor-specific Health and Safety Plans (HASP), as applicable. Daily tailgate safety briefings will be conducted prior to going into the field. Additional safety briefings may be given prior to undertaking particular activities such as sampling near water, handling sample containers containing acids, etc. In general, sampling will only be conducted during daylight hours (if possible) by qualified, 3rd party personnel and under weather or other environmental conditions that do not create unsafe working conditions. The appropriate personal protective equipment (PPE) will be utilized for each task. Any health and safety-related incident will be promptly reported to TPC site personnel.

3.0 DATA QUALITY OBJECTIVES

The data collected during field activities will be used to assess potential exposures of members of the public and ecological receptors to constituents potentially related to the fire and subsequent response activities. Because changes in environmental conditions are likely during the response, this will be done by reporting on chemical constituents found in the environment at the time and location of sample collection.

A strategic planning approach based on scientific method will be employed for data collection activities providing a systematic procedure to ensure the type, quantity and quality of data used in decision-making will be appropriate for the intended application.

Sampling procedures that will be used are based primarily on approved protocols developed by EPA, including those presented in A Compendium of Superfund Field Operations Methods (EPA, 1987). Sections 4.2 and 5.2 summarize the sampling methods to be utilized in each media.

4.0 SOIL/DITCH SEDIMENT ASSESSMENT AND SAMPLING

4.1. SOIL ASSESSMENT

To assess the Site, Areas of Interest will be identified which may include the following:

- Area of Interest 1 (AOI-01) Storm water outfalls – Based on the combination of releases occurring concurrently with the fire and subsequent response activities, there is a potential for constituents of potential concern (COPCs) to have been transported through the facility storm water management ditches to its permitted outfalls.

- Area of Interest 2 (AOI-02) Storm water ditch – Based on the combination of releases occurring concurrently with the fire and subsequent response activities, as well as significant rainfall at the Site, there is a potential for constituents of potential concern (COPCs) to have migrated off-site via the roadside storm water ditches.

- Background soil sample locations may be collected to evaluate naturally occurring constituent concentrations for evaluation of sampling results.

4.2. SOIL/DITCH SEDIMENT SAMPLING

Soil/ditch sediment samples collected from the potential AOIs listed above will be analyzed for applicable COPCs identified in Table 1 (Appendix B).

Soil samples will be collected using hand auger, trowel, or shovel. Each sample will be transferred to an appropriate laboratory supplied container, properly labeled, and placed in a cooler and maintained at a temperature of approximately 4°C, if preservation by temperature control is required. Head space in each sample container will be minimized to prevent loss of COCs due to volatilization.

5.0 SURFACE WATER EVALUATION AND SAMPLING METHODOLOGY

5.1. SURFACE WATER MONITORING

In order to determine that water quality is maintained for the duration of response and post response/remediation activities, monitoring at various surface water sampling location may be conducted using a YSI multi-parameter water quality meter, or equivalent. Surface water monitoring may be conducted daily or on an as needed basis (e.g., concurrent with sample collection) and may include the following parameters:

- Temperature (°C)
- pH (0-14 standard units)
- Conductivity (Siemens/meter)
- Dissolved Oxygen (milligrams/liter)
- Turbidity (NTU)

Visual observations will be made at each surface water sampling locations and electronically noted using a hand-held data collection device or recorded in a log dedicated to this project.

The water quality meters in use on this project will be calibrated in accordance with the manufacturer's specifications.

5.2. SURFACE WATER SAMPLING

Surface water samples will be decanted directly into laboratory supplied sample containers and submitted to Pace Analytical Services (Pace Labs) and/or Earth Analytical, Inc. both NELAP accredited laboratories for laboratory analysis as presented in Table 2. Water quality parameters, including: temperature, pH, conductivity, dissolved oxygen, and turbidity may be recorded for each surface water sample. Surface water sampling may involve collection of water at various depths.

5.3. LOCATION, FREQUENCY, AND DURATION

Surface water samples may be collected from upgradient locations from the site to establish background concentrations and impounded drainage features near the Site.

Additional sampling locations may be added as appendices based on a review of the preliminary results and/or a change in operational areas and activities.

Surface water samples will be collected one time initially at each location. Subsequent samples may be collected, as required for statistics representativeness.

6.0 SAMPLE HANDLING PROCEDURES

Samples will be placed in laboratory supplied sample containers, appropriate for the intended analysis, labeled with sample identification number, sample depth (for soil/ditch sediment sampling), sampler name, sample date, analysis and methodology requested, and time of sample collection, and immediately placed in a cooler on ice pending laboratory analysis. Samples will be packaged, labeled, retained on ice, and documented in an area which is free of impact and provides for secure storage. Custody seals will be placed on each sample containing cooler, and chain-of-custody procedures will be maintained from the time of sample collection until arrival at the laboratory to protect sample integrity. Shipping or transporting of samples to the laboratory will be done within a timeframe such that recommended holding times are met. Hold times are summarized on Tables 1 thru 2 (Appendix B).

7.0 SAMPLE LABELING

Sample containers will be clearly labeled with the following information:

- Unique sample identification;
- Sample Type (discrete or composite; soil/ditch sediment samples only)
- Sample Depth (soil/ditch sediment samples and/or surface water samples);
- Sampler name or initials;
- Date sample collected;
- Time sample collected; and
- Analysis to be performed.

8.0 LABORATORY ANALYSES

Samples will be transported to Pace Labs and/or Earth Analytical, meeting National Environmental Laboratory Accreditation Conference (NELAC) certifications. Samples will be submitted for laboratory analyses for the following:

- Volatile organic compounds (VOCs), including tentatively identified compounds (TICs), by EPA Method 8260B (SW-846) gas chromatography/mass spectrometry (GC/MS);

- Semi-volatile organic compounds (SVOCs) by EPA Method 8270 SIM (SW-846) GC/MS modified for simultaneous ion monitoring (SIM);
- Ethylene glycol by EPA Method 8015;
- TPH-GRO by EPA Method 8015/TX1005;
- Total Organic Carbon (TOC) via method SM 5310C; and
- Oil and Grease via Method 9071/Method 1664

Analytical methods, hold times, sample containers, and preservation, are summarized in Tables 1 thru 2.

9.0 QUALITY ASSURANCE

Sampling will be carried in a manner that is compliant with state regulatory QAPP requirements and respective methods to ensure that samples are collected without the effects of accidental cross- or systematic contamination. To provide QA for the proposed sampling event, the following sampling, analysis, and data validation procedures will be performed:

9.1. Field Calibration

Electronic instruments used in the field as part of this sampling event are anticipated to consist of PIDs, GPS units, digital cameras, and handheld data collection devices such as tablets/smart phones. PIDs will be calibrated daily. Non-electric equipment is not anticipated to require field calibration. Technicians utilizing each piece of equipment are responsible for maintaining (including proper battery charge) and operating this equipment such that it conforms to each respective manufacturer's specifications.

9.2. Field Duplicate Sample

For approximately every ten samples collected in the field, one field duplicate will be collected and submitted for laboratory analyses to verify the reproducibility of the sampling methods. Field duplicates will be prepared by separately submitting an aliquot from the same sample location to the laboratory for analysis consistent with the proscribed analyses. The submitted duplicate will be submitted such that the laboratory is not aware that it is a duplicate (i.e., the sample ID will not identify it as a "duplicate" for any specific sample location). At least one field duplicate will be collected each day that samples are collected.

9.3. Field Co-Located Samples

Field co-located refer to samples collected by the regulatory agency or its designee from the same sampling location and independently submitted to a different laboratory for analysis. Co-located samples may be collected at the discretion of representatives of state and federal regulatory agencies.

9.4. Laboratory QA

Laboratory quality control procedures will be conducted in a manner consistent with state regulatory requirements and respective analytical methods. Deliverables will contain the supporting documentation necessary for data validation. Internal laboratory quality control checks will include method blanks, matrix spikes (and matrix spike duplicates), surrogate samples, calibration standards, and laboratory control standards (LCSs).

9.5. Matrix Spike/Matrix Spike Duplicate Sample

Matrix Spike/Matrix Spike Duplicate (MS/MSD) samples refer to field samples spiked with the analytes of interest prior to being analyzed at the laboratory to gauge the quality of analysis. Approximately one in twenty samples will be analyzed as MS/MSD samples.

9.6. Data Validation

Validation of the data generated by the laboratory performing the analyses will include at a minimum sample holding times, accuracy, precision, contamination of field generated or laboratory method blanks, and surrogate compound recovery. Accuracy will be determined by evaluating LCS and MS recovery. Precision will be determined by evaluating laboratory and field duplicate samples, where two sub-samples are taken from a single, homogenous sample from the same container, and are taken through the same preparative and analytical procedures to evaluate analytical precision. Level II data validation will be performed on 100% of submitted samples. Level IV data validation may be performed on up to 10% of submitted samples. All supporting data will be included in the data report package.

10.0 SAMPLE EQUIPMENT DECONTAMINATION PROCEDURES

Decontamination procedures refer to the steps undertaken to minimize the potential for offsite contamination and cross-contamination between individual sampling locations. Prior to collecting any sample for this release the following decontamination procedures will be undertaken: non-disposable sampling equipment which may come into contact with sampling

media will be decontaminated using a bristled brush and a solution comprised of a laboratory grade, non-phosphate detergent (e.g., Alconox or Liquinox) and deionized water. Depending on ancillary activities being conducted for the response to this release, the decontamination of sampling equipment will be conducted over poly sheeting at the sample location or in a nearby designated area. The sampling equipment to be decontaminated will first be placed in a bucket containing the detergent solution and thoroughly washed using a bristled brush. The items will then be transferred to the second 5-gallon bucket containing deionized water for rinsing. Following the initial rinsing, the item will be held over the third 5-gallon bucket while deionized water is carefully decanted over each item. Decontaminated items will be wrapped in clean aluminum foil for transit to the next sampling location.

Nitrile gloves will be worn by sampling personnel and changed between activities at each discrete sample collection location. Previously worn nitrile gloves will be discarded in appropriate waste receptacles with other PPE.

11.0 WASTE DISPOSAL

The method for storage and disposal of investigative derived waste materials will comply with applicable local, state and federal regulations.

12.0 DATA ANALYSIS

To assess the potential impact from contact with light end hydrocarbons (i.e., 1,3-butadiene, raffinate) the results of sampling will be reviewed for the presence/absence of these compounds, and should they be found, the concentrations of these parameters relative to the COPCs results will be evaluated against TCEQ's Texas Risk Reduction Program (TRRP) Critical Protective Concentration Levels (cPCLs) or other applicable regulatory screening criteria.

13.0 DATA MANAGEMENT

The data collected will be shared appropriate TPC group.

14.0 RECORDS MANAGEMENT

Records management refers to the procedures for generating, controlling, and archiving project-specific records and records of field activities. Project records, particularly those that are anticipated to be used as evidentiary data, directly support current or ongoing technical studies and activities, and provide historical evidence needed for later reviews and analyses, will be legible, identifiable, retrievable and protected against damage, deterioration, or loss on a centralized electronic database. Handwritten records will be written in indelible ink. Records will likely include, but are not limited to, the following: bound field notebooks on pre-numbered

pages, sample collection forms, personnel qualification and training forms, sample location maps, equipment maintenance and calibration forms, chain-of custody forms, maps and drawings, transportation and disposal documents, reports issued as a result of the work, procedures used, correspondences, and any deviations from the procedural records. Documentation errors will be corrected by drawing a single line through the error so it remains legible and will be initialed by the responsible individual, along with the date of change, and the correction will be written adjacent to the error.

Records will be maintained in accordance with the document retention policy established for this incident.

Appendix A

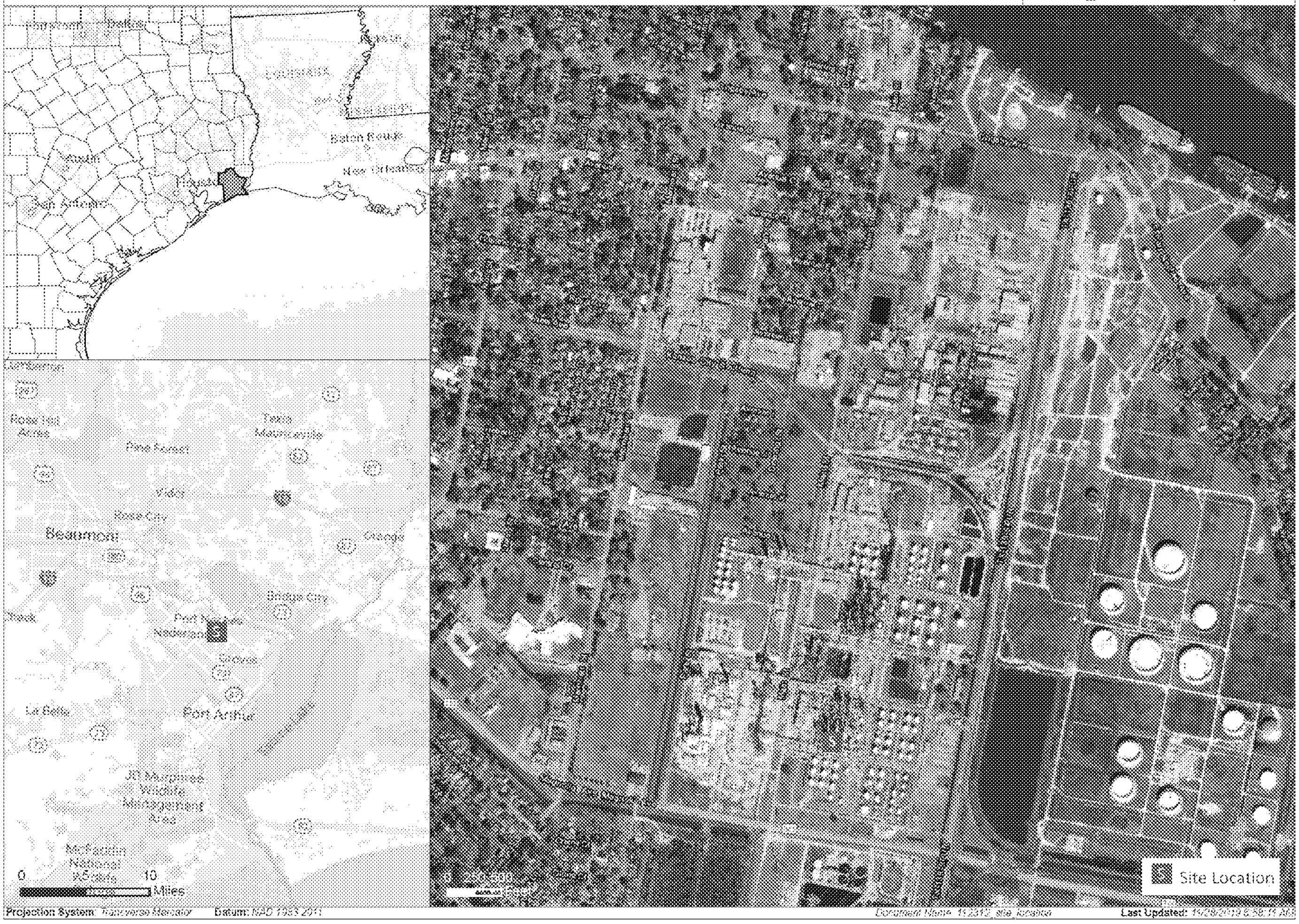
FIGURES

CTEH

Site Location - Figure 1

Port Neches TPC Plant Fire

Project: 112312
Client: TPC Group
City: Port Neches, TX
County: Jefferson



Projection System: Transverse Mercator   Datum: NAD 1983 2011   Document Name: 112312_site_location   Last Updated: 11/28/2019 6:58:11 AM

Appendix B

TABLES

TABLE 1 –SOIL/DITCH SEDIMENT SAMPLING SUMMARY

ANALYSIS	METHOD	SAMPLE CONTAINER	PRESERVATIVE	HOLD TIME
Volatile Organic Compounds (VOCs) + TICs	EPA SWA-846 8260b	Terracore	Methanol; Ice, maintained at 0-6°C	7 days preserved; 14 days unpreserved
Semi-volatile Organic Compounds (SVOCs) (SIM)	EPA SWA-846 8270c (SIM) 17 PAH	8-oz wide mouth soil jar*	Ice, maintained at 0-6°C	7 days from collection to analysis; 40 days from extraction to analysis
Ethylene Glycol	US EPA Methods 8015	8-oz wide mouth soil jar (shared jar with PAHs)	Ice, maintained at 0-6°C	14 days
TPH-GRO	US EPA Method 8015/TX-1005	Terracore	Ice, maintained at 0-6°C	Terracore-extracted within 48; soil jar is 7 days
PFAS	EPA 537M	(1) 125 mL HDPE	Unpreserved, Ice, maintained at 0-6°C	28 days
TOC	SM 5310C	(1) 4 oz glass jar	Unpreserved, Ice, maintained at 0-6°C	28 days
Oil and Grease	Method 9071	(1) 4 oz soil jar	Unpreserved, Ice, maintained at 0-6°C	28 days

TABLE 2 – SURFACE WATER SAMPLING SUMMARY

ANALYSIS	METHOD	SAMPLE CONTAINER	PRESERVATIVE	HOLD TIME
Volatile Organic Compounds (VOCs) + TICs	EPA SWA-846 8260b	2 x 40 mL VOA vials	HCL to pH < 2; Ice, maintained at 0-6°C	7 days preserved; 14 days unpreserved
Semi-volatile Organic Compounds (SVOCs)	EPA SWA-846 8270c (SIM)	2 x 1 L Amber Glass	Ice, maintained at 0-6°C	7 days preserved; 14 days unpreserved
Ethylene Glycol	US EPA Methods 8015	2 x 40 mL VOA vials	Ice, maintained at 0-6°C	14 days
TPH-GRO	US EPA Method 8015/TX-1005	2 x 40 mL VOA vials	HCL to pH < 2; Ice, maintained at 0-6°C	7 days preserved; 14 days unpreserved
PFAS	EPA 537M	(2) 125mL HDPE	unpreserved	28 days
TOC	SM 5310C	(2) 40 mL VOAs	HCL to pH < 2; Ice, maintained at 0-6°C	28 days
Oil and Grease	Method 1664	(1) L Glass Jar	HCL to pH < 2; Ice, maintained at 0-6°C	28 days